

Amendments to the Claims

The following listing of claims will replace all prior versions and listings of the claims in the application:

Claims 1-8 (canceled).

Claim 9 (new): A method of precoding an orthogonal frequency division multiplexing (OFDM) system, comprising:

inserting one or more zeros between at least two sets of consecutive information symbols of the OFDM system;

expanding a data rate of the OFDM system due to the insertion of zeros; and

removing spectral nulls of an intersymbol interference (ISI) channel of the OFDM system due to expansion of the data rate of the OFDM system.

Claim 10 (new): A method of precoding an OFDM system as recited in claim 1, wherein the OFDM system is precoded independent of the ISI channel.

Claim 11 (new): A method of precoding an OFDM system as recited in claim 1, wherein the inserting of one or more zeros comprises utilizing a precoder ($G(z)$), where $G(z) = \begin{bmatrix} I_{K \times K} \\ 0_{(M-K) \times K} \end{bmatrix}$, M and K are vector sizes, $I_{K \times K}$ is the $K \times K$ identity matrix, and $0_{(M-K) \times K}$ is the $(M-K) \times K$ all zeros matrix.

Claim 12 (new): A method of precoding an OFDM system as recited in claim 11, wherein the precoder ($G(z)$) inserts $M-K$ zeros between at least two sets of K consecutive information symbols of

the OFDM system.

Claim 13 (new): A method of precoding an OFDM system as recited in claim 11, wherein the precoder ($G(z)$) is independent of the ISI channel.

Claim 14 (new): A method of precoding an OFDM system as recited in claim 11, wherein the precoder ($G(z)$) maintains the energy of a signal of the OFDM system.

Claim 15 (new): A method of precoding an OFDM system as recited in claim 11, wherein $M > K$.

Claim 16 (new): A method of reducing a data rate overhead ($\frac{(N + L)}{N}$) of an orthogonal frequency division multiplexing (OFDM) system, where N are the number of carriers in the OFDM system and L are intersymbol interference (ISI) channel lengths of the OFDM system, the method comprising:

providing a precoder ($G(z)$), where $G(z) = I_{K \times K}$, K is a vector size, and $I_{K \times K}$ is the $K \times K$ identity matrix; and

squaring the identity matrix ($I_{K \times K}$) of the precoder ($G(z)$) to group input data of the OFDM system into $K \times 1$ vectors, maintain the data rate of the OFDM system, and reduce the data rate overhead ($\frac{(N + L)}{N}$) of the OFDM system.

Claim 17 (new): A method of reducing a data rate overhead of an OFDM system, wherein the method reduces the data rate overhead of the OFDM system K times.

Claim 18 (new): A method of reducing a data rate overhead of an OFDM system, wherein the squaring of the identity matrix ($I_{K \times K}$) further removes spectral nulls from the ISI channel.